Summer 2006

infoCycling

A newsletter providing assistance in waste reduction to local governments, State agencies, and large State facilities. Published by Cal/EPA's ***Integrated Waste Management Board****.*

www.ciwmb.ca.gov/LGLibrary/infoCycling/

inside

Multifamily recycling workshops slated for September 2006

In recognition that multifamily recycling programs are important for California's continued success in waste reduction and recycling activities, the California Integrated Waste Management Board (CIWMB) will be hosting two workshops targeting recycling coordinators and other local officials who want to achieve greater success with recycling programs in apartments and condominiums.

The workshops will offer data from recent pilot programs targeting apartments and condominiums, as well as successful ideas and tools to meet multifamily housing recycling challenges, increase quantity and quality of recyclables collected, and improve city and county diversion rates.

Times and places for the two workshops are:

- Wednesday, **September 13, 2006**, California Environmental Protection Agency Headquarters, 1001 I Street, Sacramento, CA 95814.
- Thursday, **September 28, 2006**, Southern California Air Quality Management District Headquarters, 21865 Copley Drive, Diamond Bar, CA 91786.

Pre-workshop registration is not required but is appreciated. Day-of-workshop registration begins at 9:30 a.m. The workshops begin at 10:00 a.m. and should end around 1:00 p.m. If you have questions about the multifamily workshops or wish to RSVP, please contact Bob Horowitz at (916) 341-6239 or rhorowit@ciwmb.ca.gov.

Construction and Demolition Forum

Since the May 31, 2006, Construction and Demolition (C&D) Forum: Closing the Loop on C&D Materials, the CIWMB has been following up on additional C&D resources. The CIWMB has posted resources from the forum and additional resources on the Local Government Central website at www.ciwmb.ca.gov/LGLibrary/CandDModel/About.htm#Public.

California Environmental Protection Agency
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Phone: (916) 341-6240
E-mail: twebb@ciwmb.ca.gov

Editor, Tracy Webb

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Detailed characterization of construction and demolition waste

The California Integrated Waste Management Board recently completed its 2005 *Targeted Statewide Waste Characterization Study*. This complex undertaking consisted of conducting detailed characterization and quantification of the following four distinct disposed waste streams:

- Disposal and diversion of selected industry groups.
- Residuals from materials recovery facilities (MRF).
- Disposal from construction and demolition (C&D) activities.
- Disposal from the commercial self-haul and loose drop-box sector.

In this edition of *infoCycling*, the C&D portion of the 2005 study is featured. Future editions of *infoCycling* will contain articles regarding the other parts of the study.

Where and when was the C&D portion of the study conducted?

The study was conducted in the four major metropolitan areas of the state:

- San Diego Area.
- Southern California/L.A. Basin.
- San Francisco Bay Area.
- Sacramento/Central Valley Area.

These four areas are responsible for more than 70 percent of all the waste disposed in the state. Sampling of the waste stream was conducted during both winter and summer in order to account for seasonal effects.

What were the objectives of the C&D portion of the study?

The objectives of the C&D portion were to characterize the disposed waste from seven different C&D activities and to estimate the amounts disposed from each source in the four metropolitan areas. The C&D activities were identified as:

- Residential new construction.
- Residential remodel.
- Non-residential new construction.
- Non-residential remodel.
- Demolition.
- Roofing.
- Other.

The “other” category consists of such activities as road building and bridge reconstruction. In all, 622 randomly selected C&D loads were subjected to visual characterization.

(See page 3 for a picture of a sample of C&D waste.)

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Detailed characterization of C&D waste, continued from page 2

Sample of C&D waste

What were the results?

An estimated 3.1 million tons of C&D waste were disposed in California's four metropolitan areas in 2005. Most of the disposed waste came from demolition (20 percent), residential remodel (19 percent), and other C&D activities (17 percent). Approximately 75 percent of the disposed overall C&D waste stream is potentially recoverable.

The most prevalent potentially recoverable materials are composition roofing; large asphalt pavement; dirt and sand; other aggregates, which includes brick, masonry tile, and porcelain sinks; and clean dimensional lumber. (See the table below.)

In addition to the overall C&D disposed waste stream, composition data were compiled for each of the seven C&D activities, as well as overall C&D composition for each of the four metropolitan areas. The complete results of the study, as well as an explanation of the methodology used, can be found in the final report. A link to that report is provided at the end of this article.

Top Ten Disposed Materials: Overall C&D in Four Metropolitan Areas of California, 2005

Material	Divertible	Est. Percent	Cum. Percent	Est. Tons
Composition Roofing	Yes	10.2%	10.2%	318,494
Remainder/Composite C&D	No	8.3%	18.5%	261,161
Large Asphalt Pavement without Re-bar	Yes	8.1%	26.6%	253,286
Dirt & Sand	Yes	6.6%	33.2%	206,729
Other Aggregates	Yes	6.4%	39.6%	199,544
Clean Dimensional Lumber	Yes	5.9%	45.5%	185,276
Large Concrete without Re-bar	Yes	5.2%	50.7%	163,483
Painted/Stained Wood	No	4.6%	55.4%	145,333
Clean Gypsum Board	Yes	4.5%	59.8%	140,348
Clean Engineered Wood	Yes	4.5%	64.3%	139,975
Total		**64.3%**		**2,013,629**

The figures, when added together, may not exactly match the totals shown, due to rounding.

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Detailed characterization of C&D waste, continued from page 3

What additional tool was created along with the study?

As part of the C&D task, the CIWMB developed a visual characterization method. Staff from local jurisdictions can easily use this "Visual Protocol" to evaluate their own C&D disposed waste streams. Several staff from local jurisdictions in the study areas assisted in the development of the method by field-testing it and providing suggestions for improvement.

The Visual Protocol consists of a booklet that offers a step-by-step guide to conducting visual waste characterization of C&D loads and a calculation tool. The guide includes lists of required equipment and safety gear, sample forms for tracking loads and recording data, a list of material definitions, and a training aid to help jurisdiction staff learn how to estimate the amounts of each of the different material types within a given C&D load. The guide is currently undergoing final evaluation and will be posted on the CIWMB's Solid Waste Characterization website (www.ciwmb.ca.gov/WasteChar/) when completed. The calculation tool can be used to enter all the sample data collected in the field. The evaluator then simply selects one button and receives a statistical estimate of the material composition of their C&D waste stream.

Who do I contact for more information?

For more information on the *2005 Targeted Statewide Waste Characterization Study: Detailed Characterization of Construction and Demolition*, contact Nancy Carr at (916) 341-6216 or ncarr@ciwmb.ca.gov. Or, contact Tom Rudy at (916) 341-6229, or trudy@ciwmb.ca.gov. The study is available at www.ciwmb.ca.gov/Publications/default.asp?pubid=1185.

Benefits of commercial green building

Californians are facing record-setting heat this summer, which has increased the demand for electricity. According to the California Independent System Operator (ISO), energy usage reached levels in July 2006 that were not expected until five years from now. Stage 3 energy emergency levels resulted in involuntary interruptions of service.

During this major heat wave, Governor Schwarzenegger flexed California's power by directing all State employees and State agencies to reduce electricity usage by 25 percent.

How the State operates and maintains facilities has a direct impact on energy demands of today.

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Commercial green building, continued from page 4

The Governor's Green Building Initiative calls for State buildings to be 20 percent more energy-efficient by 2015.

The Governor's Green Building Initiative (Executive Order S-20-04) calls for State buildings to be 20 percent more energy-efficient by 2015. The Executive Order is available on the Green California website at www.green.ca.gov/default.htm.

Green building encompasses more than just energy efficiency. Green building, sustainable building, and high-performance design are interchangeable terms for a process where buildings are designed, built, renovated, operated, or reused in an ecological and resource-efficient manner. These buildings result in waste diversion, water conservation, improved indoor air quality, and site planning to minimize overall environmental impacts.

Sustainable building provides cost savings to all Californians through improved human health and increased productivity, lower cost building operations, and resource efficiency.

California's Green Building Initiative requires State-owned facilities to be designed, constructed, operated, and renovated according to the Leadership in Energy and Environmental Design® (LEED) Silver certification standard (or higher). LEED is a rating system developed by the U.S. Green Building Council. The Governor's Green Building Initiative encourages the private sector to achieve the same goals.

California has the most registered LEED projects in the nation. This is partly due to the State's commitment to green building. It also has to do with private businesses and local governments taking initiative.

At least 18 local jurisdictions have adopted ordinances or implemented a green building program. As this trend is increasing, this article highlights the City of San Francisco's Commercial Green Building Program and the County of San Diego's Green Building Incentive Program as examples of jurisdictions looking toward the future.

For more information on the State's construction and demolition (C&D) waste stream and efforts underway to reduce this waste, see "Detailed characterization of construction and demolition waste" featured in this edition of *infoCycling*.

City of San Francisco—Commercial Green Building Program

What is the City of San Francisco's Commercial Green Building Program?

The City of San Francisco's Commercial Green Building Program supports the development of high-level green buildings that benefit the City of San Francisco's environmental goals and increase the overall net value of buildings.

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Commercial green building, continued from page 5

The Commercial Green Building Program consists of:

- Green building incentives.
- Ongoing education.
- Technical support.
- Outreach events.

Green building design, construction, and operation helps to address significant environmental issues in San Francisco. Environmental benefits include:

- Extending the life of the city's landfill through construction and demolition waste reduction and management.
- Reducing overall energy and water loads and subsequent demands. Minimizing the volume and rate of stormwater, resulting in fewer broken sewer pipes throughout the city.
- Creating environments that support a healthier community through high indoor environmental quality.

What does the Commercial Green Building Program offer?

Education and outreach

Ongoing educational opportunities are provided to introduce green building concepts and strategies that improve design and construction practices. Educational opportunities occur through forums including professional associations, ad-hoc sustainability committees, and technical organizations.

Commercial green building tours are conducted at least once a month to celebrate the implementation of design and construction that add value to the city, the building owner, and the tenants.

Green design

Working closely with the San Francisco Department of Building Inspection Code Advisory Committee and the Green Building Subcommittee has resulted in changes to existing building codes to require higher levels of green design. This has allowed for expedited applications of green technologies, such as solar electricity. Green roof systems are currently being discussed and evaluated.

Leadership in Energy and Environmental Design

Current efforts are underway to implement a priority permitting program for buildings that meet or exceed the LEED Green Building Rating System Gold level. This program will move a high-level green building project through the first phase of the planning and permitting process in less than four weeks as compared to eight or more months. The goals of this initiative are:

Continued on next page

Commercial green building, continued from page 6

In September 2006, San Francisco's Commercial Green Building Program team will issue a 12-page Green Building Supplement in the San Francisco Business Times.

1. To stimulate a sustainable building environment in San Francisco—less energy and water demands, use of local, salvaged, reused, and recycled-content building materials, better indoor air/environmental quality, less construction and demolition waste, increased durability, and improved satisfaction with buildings.
2. To create a market advantage for the project team—expedited occupancy, energy savings, operations, and maintenance cost reductions and healthier environments to improve worker productivity.

The San Francisco Commercial Green Building Program strives to be a conduit of green building information in order to increase the accessibility of green buildings in the city. With more than 768 LEED Accredited Professionals (representing 200 companies) in San Francisco, there is a lot of momentum in green building.

The city's goal is to provide resources to make it easier for the project teams to build green. Building data and case studies are being pursued to obtain lessons learned in order to improve the buildings of the future.

What's next?

In September 2006, the Commercial Green Building Program team will issue a 12-page Green Building Supplement in the *San Francisco Business Times*. This supplement will highlight companies that are developing green projects, green products, and companies that provide green services. For questions about advertising or to submit ideas for articles, please contact Melinda Hue at San Francisco Environment, (415) 355-3718 or Melinda.hue@sfgov.org.

If you would like more information about Commercial Green Building in San Francisco, contact Laura Ingall at San Francisco Environment, (415) 355-3753 or laura.ingall@sfgov.org.

County of San Diego—Green Building Incentive Program for commercial buildings

What is the County of San Diego's Green Building Incentive Program for commercial buildings?

The County of San Diego's Green Building Incentive Program is a voluntary program to promote energy efficiency, use of resource-efficient construction materials, and water conservation in new and remodeled commercial buildings.

How do projects qualify?

In order to be eligible for this program, commercial projects must comply with one or more of the green building measures in the Natural resources conservation, Water conservation, and Energy efficiency categories on page 8.)

Continued on page 8

Commercial green building, continued from page 7

San Diego uses incentives to promote commercial green building.

1. Natural resources conservation
    - Recycled-content materials
        a) At least 20 percent of the building materials must contain 20 percent or more postconsumer recycled content. Reused building materials meet this requirement, or
        b) Major building materials such as roofing or those that serve a structural function must contain 50 percent or more postconsumer recycled content.
    - Straw bale construction
        - New buildings constructed of rice or wheat straw bales, which have historically been burned as a waste product, provide super-insulating benefits that are more energy-efficient than wood-frame buildings. Use of straw bales for exterior wall construction qualifies for the program incentives.
2. Water conservation
    - Graywater systems
        - Graywater has the ability to supply most irrigation needs for landscaping. It conserves potable water and benefits plants because it often contains plant nutrients such as nitrogen or phosphorous. Since supplying water throughout California is 40 percent of the energy demand, reducing water consumption also helps to conserve energy. Wastewater from bathroom sinks, showers, and washing machines can be recycled and reused for subsurface drip irrigation to obtain a green building incentive.
3. Energy efficiency
    - Exceeding energy code minimum standards
        - Title 24 is the State energy code that prescribes minimum requirements for energy-efficient design and construction. Commercial projects that exceed Title 24 by 25 percent are eligible for incentives. Documentation of projects that exceed the minimum threshold is required as part of the submittal process.

Incentives

Two main incentives are offered to eligible participants of San Diego's Green Building Incentive Program for commercial buildings.

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Commercial green building, continued from page 8

Projects are able to go through an expedited plan check process and save 7.5 percent in fees. Incentives include the following:

- Expedited process (saving 7-10 days).
- Reduced fees for plan check and building permit (7.5 percent savings).

San Diego County's Construction and Demolition Recycling Guide

About 35 percent of the material that goes to the landfill in San Diego County is C&D debris, which could be salvaged, reused, or recycled for other beneficial uses. The county offers a guide on how to:

- Reduce C&D waste.
- Develop a waste management plan.
- Recycle or reuse materials.

This guide includes a full listing of recycling centers in the county. To download a copy of the C&D Recycling Guide, visit www.co.san-diego.ca.us/dpw/recycling/guides.html.

For more information about San Diego County's Green Building Incentive Program including residential incentives, contact Clay Westling at (858) 495-5082 or clay.westling@sdcounty.ca.gov. Information is also available on the County of San Diego website at www.sdcounty.ca.gov/dplu/greenbuildings.html.

Do you want more information on sustainable building practices?

The California Integrated Waste Management Board Green Building Design and Construction website (www.ciwmb.ca.gov/GreenBuilding/) offers a multitude of information and tools relating to sustainable building.

"Green California" (www.green.ca.gov) is the gateway for the latest information on how the State of California is working to reduce energy and resource consumption, while creating safer and healthier environments in which to work, live, and learn.

Local Government Central website search—resources and tools at your fingertips

The Local Government Central (LG Central) website is an informative, user-friendly site designed to assist jurisdictions, State agencies, and large State facilities in meeting diversion requirements.

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LGCentral website search, continued from page 9

Be sure to bookmark Local Government Central as a "favorite" for easy access.

An alphabetical index, a local government (LG) search tool, and a site map are available to assist jurisdictions, State agencies, large State facilities, and others in locating a multitude of resources and tools on the LG Central website and elsewhere. These three resources and tools are convenient and provide ease in searching for what you need.

Alphabetical Index

This useful index provides easy access to the major topics of interest within the LG Central website and elsewhere. At the top of this helpful web page, you will find A to Z links that bring you to the topic area of your choice located on the page. Simply select the letter of your choice, and then select the topic of your choice.

For example, if you want disposal reporting information, select *D*. Then, select from the various topics on disposal reporting located under *D*. Databases are marked by a double asterisk (**). The alphabetical index is available at www.ciwmb.ca.gov/LGCentral/Index.htm.

LG Central Search

This handy search tool allows you to search for a wide array of topics in LG Central and the entire CIWMB website. From this web page, under "Search for pages containing this word or pattern," type in the word or topic, select either "Search Local Government Central" or "Search Entire CIWMB site," then select "Search." Or, under "I would like to," select the drop-down box by clicking on the down-pointing arrow and select one of the many topics available. For example, you can select "View '*infoCycling*,' the Board's local government newsletter." Also available on this web page are search tips and advanced searching links. This LG Central search tool is available at www.ciwmb.ca.gov/Search/LGSearch.asp.

Site Map

This helpful map enables you to easily navigate through the web pages by listing the topics and tools within the LG Central website and elsewhere. Along the top of the web page, the following topics are listed: "Waste Stream, Reporting, Program, Summaries, Resources, and Databases."

After selecting one of these topics, you are taken directly to the topic area on the site map. From the topic area, direct links are provided to the various topics listed. Within each major topic, subtopics are organized alphabetically.

Further details for each major topic are marked by a single asterisk (*). Databases are marked by a double asterisk (**). The site map is available at www.ciwmb.ca.gov/LGCentral/SiteMap.htm.

Contact information

If you have questions about these resources and tools, contact Larry Stephens at (916) 341-6241 or lstephen@ciwmb.ca.gov.

Local Government Assistance Library

Have you visited the Local Government (LG) Assistance Library website (www.ciwmb.ca.gov/LGLibrary/) lately?

Jurisdictions, State agencies, large State facilities, and others can link to CIWMB-developed assistance documents and examples of materials that have been submitted to the California Integrated Waste Management Board (CIWMB) by local jurisdictions.

The following topics are listed on the web page. These topics directly link to CIWMB web pages.

Basics
(www.ciwmb.ca.gov/LGCentral/Basics/) includes a series of fact sheets to help local government officials and others understand and fulfill their diversion responsibilities.

Board Guidance Documents
(www.ciwmb.ca.gov/LGLibrary/Guidance.htm) provides guidance and information for jurisdictions to meet IWMA requirements. These guidance documents are produced by the CIWMB, jurisdictions, and others.

infoCycling
(www.ciwmb.ca.gov/LGLibrary/infoCycling/default.htm) provides time- and cost-reducing tools and information that can assist local governments, State agencies, and large State facilities in evaluating their current diversion performance.

Local Government Data Tools
(www.ciwmb.ca.gov/LGCentral/DataTools/Default.htm) provides databases, tools, and information to assist local governments and businesses in reducing disposal and conserving resources.

Model Documents
(www.ciwmb.ca.gov/LGLibrary/ModelDocs.htm) offers models and templates to assist jurisdictions when reporting to the CIWMB and quantifying their diversion efforts.

Local Jurisdiction Case Studies
(www.ciwmb.ca.gov/LGLibrary/CaseStudies/default.htm) provides a list of successful diversion programs that have been developed by the CIWMB or implemented by California jurisdictions.

Local Jurisdiction Waste Diversion and Recycling Outreach Materials
(www.ciwmb.ca.gov/LGLibrary/Outreach/Default.htm) showcases some jurisdiction diversion and recycling outreach materials.

Local Jurisdiction Sample Documents
(www.ciwmb.ca.gov/LGLibrary/LocalDocs/Default.htm) includes materials submitted to the CIWMB by local jurisdictions, such as regional agency agreements, joint powers agreements,

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Local Government Assistance Library, continued from page 11

memoranda of understanding, solid waste ordinances, public education materials, and petitions for reduction in diversion mandates.

Local and Regional Summaries and Statistics Center (www.ciwmb.ca.gov/LGCentral/Summaries/) provides jurisdiction and regional summary information to help decision makers identify trends, solve problems, and compare the performance of cities, counties, and regional agencies in reducing and diverting waste.

Need Help? (www.ciwmb.ca.gov/LGCentral/Help.htm) provides the user with tools to search the website, define terms, look up publications, and ask questions about waste issues.

If you have questions regarding this website, contact Larry Stephens at lstephen@ciwmb.ca.gov or (916) 341-6241.

Remember to review your disposal amounts each quarter, and check into any questionable disposal amounts before your annual report is due!

Accessing disposal data records

Jurisdictions—Do you have unanswered questions regarding your city, county, or regional agency's allocated disposal amounts?

Have you been unable to get access to the information you need from disposal facilities or haulers?

Did you know regulations state that you have the right to access the disposal data records that pertain to your jurisdiction?

In fact, hauling companies and permitted solid waste facilities must maintain disposal data records for at least three years and must allow affected jurisdictions access to those records.

For more information, see Title 14 of the California Code of Regulations (14 CCR): Chapter 9, Article 9.2, section 18808.4 for haulers, section 18809.4 for transfer stations, and section 18810.4 for landfills in the regulations at www.ciwmb.ca.gov/Regulations/Title14/ch9a92c.htm.

Although most haulers and facility operators are cooperative about sharing requested data, sometimes this is not the case. What do you do when a hauler or operator is not cooperative in providing timely access to information?

The California Integrated Waste Management Board (CIWMB) developed a sample form letter that jurisdictions may tailor as needed to set up an audit of the records of haulers or operators.

The letter provides the recipient (hauler or operator) with a specific request for information. The regulations require haulers and operators to respond to this type of written request for information in a specified time frame.

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Accessing disposal data records, continued from page 12

The letter is available on the CIWMB Local Government Central Disposal Reporting System website at www.ciwmb.ca.gov/LGCentral/DRS/SmplAuditLtr.doc.

For more information regarding the audit letter, see Title 14 of the California Code of Regulations (14 CCR): Chapter 9, Article 9.2, section 18813.4, which is available at www.ciwmb.ca.gov/Regulations/Title14/ch9a92f.htm.

In addition, if you have any questions regarding the audit letter, contact Diane Shimizu at (916) 341-6205 or dshimizu@ciwmb.ca.gov.

New on Local Government Central—Claiming Disaster Debris Disposal Deductions Basic

Check out the new Claiming Disaster Debris Disposal Deductions Basic (www.ciwmb.ca.gov/LGCentral/Basics/DisastrDbris.htm) on the California Integrated Waste Management Board (CIWMB) Local Government Central website.

This Basic includes:

- Definitions.
- Requirements for jurisdictions claiming a disaster waste disposal deduction.
- Requirements for facilities taking disaster waste.
- CIWMB web pages or resources.
- Legislation, Statutes, and Regulations.

For more information on claiming disaster debris disposal deductions, contact your CIWMB Office of Local Assistance representative. A list of representatives is available on the Local Assistance Contacts web page at www.ciwmb.ca.gov/OLA/Contacts.asp.

Geographic information system technology

Check out the article in the May 2006 *Waste Age Magazine* titled “A Whole New World.” This article discusses uses for geographic information system (GIS) technology. The article is available at http://wasteage.com/mag/waste_whole_new_world/.

Biodiesel fuel

What is biodiesel fuel?

According to the fact sheet "BioDiesel: Commonly Asked Questions," (www.biodiesel.org/pdf_files/fuelfactsheets/CommonlyAsked.PDF) located on the National Biodiesel Board (NBB) website (www.biodiesel.org), biodiesel fuel is a clean-burning alternative fuel produced from domestic renewable resources.

Biodiesel contains no petroleum, but it can be blended at any level with petroleum diesel to create a biodiesel blend. It can be used in compression-ignition (diesel) engines with no major modifications. Biodiesel is simple to use, biodegradable, nontoxic, and essentially free of sulfur and aromatics.

In this article, we have featured two examples relating to biodiesel fuel—biodiesel fuel production in the City of Port Hueneme at a U.S. Naval facility and a biodiesel marine fueling station at the harbor in Ventura.

City of Port Hueneme—biodiesel fuel production

In 2003, The Naval Facilities Engineering Service Center (NFESC) entered into a Cooperative Research and Development Agreement (CRADA) with a biodiesel company in Santa Barbara, California. The purpose of this agreement was to demonstrate the feasibility of producing biodiesel at a Naval facility using waste vegetable oil from the Navy and the surrounding community.

Initial phase

In the initial phase of the agreement, the biodiesel company installed a 140-gallon-per-day pilot-scale batch biodiesel reactor at the Port Hueneme site and initiated the collection of used vegetable oil from six food service facilities on the base.

In parallel, NFESC developed the capabilities to perform the laboratory testing required to confirm that the biodiesel produced meets the industrial specification, ASTM D6751.

NFESC has also initiated a kinetic study of the biodiesel production chemical reaction in the laboratory. The goal of this chemical reaction study is to identify the optimal reactant concentrations that result in the complete conversion of the vegetable oil in the shortest time possible.

Based on the current industry practice, it is expected that a 30 percent reduction in the biodiesel manufacturing time is possible. As NFESC gains a better understanding of the conversion reaction, the pilot plant will be used to test various chemical reaction improvement ideas.

Second phase

In the second phase of the agreement, the biodiesel company will be replacing the pilot-scale production plant with a portable full-scale commercial unit capable

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Biodiesel fuel, continued from page 14

of producing 3 million gallons per year if operated 24 hours per day, 5 days per week. During this phase, the biodiesel company will initiate vegetable oil collection in the surrounding community.

As specified in the CRADA, annual production will be limited to 1 million gallons. NFESC expects that some of this fuel will be used to supply the 200,000-gallon annual use of B20 (specifically, 20 percent biodiesel) on the base. Also in this phase, the partners will further refine the chemical conversion reaction using the results from the laboratory and pilot-plant studies.

This commercial-sized plant, which is expected to become operational in the near future, will serve as a showcase for possible future implementations at additional military facilities as well as a test bed for future chemical, hardware, and process improvements jointly developed by the CRADA partners.

IN the long term, NFESC expects that biodiesel production plants may be sited at 15 or more military facilities around the world. This will result in a significant improvement in the security of the military fuel supply as well as stabilization in fuel costs.

Eventually, the military could send portable biodiesel processing units overseas to produce its own fuel while on missions abroad.

Contact information

To obtain additional information on these biodiesel fuel production efforts, contact Bruce Holden, P.E., Naval Facilities Engineering Service Center, at (805) 982-6050 or bruce.holden@navy.mil.

Ventura—biodiesel marine fueling station

A marine fueling station at Ventura Harbor in Ventura has been dispensing biodiesel fuel to boaters since the fueling station's inception in 2002. The fueling station makes biodiesel fuel available to boaters in Southern California because of its natural fit with the marine environment.

A plus for the environment and boaters is the fact that if biodiesel fuel accidentally spills in the ocean water, the biodiesel fuel degrades much faster than regular diesel fuel. Clearly, our waterways are being better protected through the use of biodiesel fuel.

According to the "Easier on Marine Environment" article on the NBB website (www.biodiesel.org/markets/mar/), biodiesel is biodegradable—C16-18 methyl esters are considered biodegradable based on their chemical nature and test data collected for experimentally determined oxygen demand and carbon dioxide production as a percent of calculated theoretical values.

C16-18 methyl esters do not show any microbiological inhibition up to 10,000 mg/L. In tests performed by the University of Idaho, biodiesel in an aqueous solution after 28 days was 95 percent degraded. Diesel fuel was only 40 percent degraded.

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Biodiesel fuel, continued from page 15

In a second study done in an aquatic environment (CO_2 Evolution), various biodiesel products were 85.5–88.5 percent degraded in 28 days, which is the same rate as sugar (dextrose). Diesel degradation was 26.24 percent. For more information, see the NBB Easier on Marine Environment web page mentioned on page 15.

Another big advantage to boaters is the virtual elimination of diesel exhaust odors. These are replaced by biodiesel odors, which have a smell similar to french fry oil.

A company that specializes in transporting visitors to the Channel Islands commented that even when their 150-passenger vessel was inside the Painted Cave on Santa Cruz Island, the diesel odor was eliminated when using a 20 percent mix of biodiesel fuel with 80 percent regular diesel.

The U.S. park service at the harbor has four boats (also known as vessels) that are committed to using between 10 to 100 percent biodiesel fuel each time they fuel up. The vessels range from 60– to 100–foot service boats that run supplies to their rangers on the Channel Islands. The park service's dedication to using biodiesel fuel has been the catalyst in making this environmentally friendly product available to public boaters as well.

Other than the park service and concessionaires, sailboats are the next biggest biodiesel fuel user at the harbor. In the close quarters of these usually smaller vessels, the relief from the diesel odor seems to be the most favored attribute.

The harbor has realized a 50 percent increase in biodiesel sales for each of the last three years. Needless to say, Ventura and the harbor are quite excited about the environmental benefits and the viability of this alternative fuel.

Contact information

For more information on Ventura's biodiesel fueling station at Ventura Harbor, contact Paul Kavon at (805) 644-4046 or vhmf@sbcglobal.net.

Where do I get biodiesel fuel?

According to NBB Biodiesel Basics (www.biodiesel.org/resources/biodiesel_basics/), biodiesel is available nationwide. It can be purchased directly from biodiesel producers and marketers, petroleum distributors, or at a handful of public pumps throughout the nation. See Buying Biodiesel—Guide to Buying Biodiesel (www.biodiesel.org/buyingbiodiesel/guide/default.shtm) for more information.

The construction site cleanup at Del Webb Sun City helped the City of Lincoln exceed their diversion goals!

City of Lincoln—construction site cleanup at Del Webb Sun City

A contractor was hired to perform cleanup services at the Del Webb Sun City construction site in Lincoln, where approximately 6,500 homes were built during a three-year period. The contractor managed the construction debris for hauling. In fact, they became a franchise hauler for the City of Lincoln for this project, receiving a full franchise agreement.

The contractor set up an on-site material recovery facility (MRF) to sort the waste material. (See the photo below.) The contractor also provided 250 debris boxes throughout the Del Webb development to collect and haul waste to the MRF.

In June 2004, the material diverted totaled 675 tons, not including inert materials. Some of the material diverted included:

- 270 tons of wood.
- 10 tons of dimensional lumber.
- 4 tons of sheet plastic.
- 10 tons of plate glass.
- 675 pounds of CRV glass.
- 33 tons of metal.
- 54 tons of cardboard. (See photo below.)

Cardboard

One hundred percent of the materials were processed, and at least 85 percent of the materials were diverted during the total time of the project. The immense amount of waste reduction the contractor was able to achieve on this project illustrates the significant potential that exists for diverting construction debris materials.

Contact information

For more information regarding this project, contact Adam Barrows at (916) 638-6775 or adam@2riversdemo.com. Or, contact John Pedri, City of Lincoln Public Works Department at (916) 645-8576.

Photos on this page appear courtesy of Roderick Palon.

Editor's note

I hope you enjoyed this edition of *infoCycling*. Look for the next edition of *infoCycling* in the fall of 2006. Please contact me with suggestions on articles you would like to see included in *infoCycling* and announcements of events in your jurisdiction or at your State agency. You can e-mail me at twebb@ciwmb.ca.gov or reach me at (916) 341-6240.

Your comments and suggestions on *infoCycling* are always welcome!

Tracy